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COMMENTS ON THE WATER SUPPLY OF YUMEN  
KANSU PROVINCE, CHINA

The Su-lo Ho is the major source of water in the Yumen area. It is conceivable that the river could provide water for industrial use at a sustained rate of 10 m<sup>3</sup>/sec (600,000 gal/min) or more, since the average year-round flow of the Su-lo Ho when it leaves the mountains is slightly above 50 m<sup>3</sup>/sec. Steady withdrawal of river water for industrial use in excess of 5 to 10 m<sup>3</sup>/sec (approximately 60,000 to 100,000 gal/min), however, would probably be difficult, especially during the winter season, without drawing on some water storage. Substantial amounts of ground water could probably be pumped at selected locations for sustained periods of some weeks; this could help to offset the winter shortage of surface water.

Figures for month-to-month variations in the rate of flow for the Su-lo Ho are not available. Comparison of the annual regime of the Shag-shui Ho, a much smaller river located about 150 kilometers to the southwest, with the general characteristics ascribed to the Su-lo Ho, provides the basis for the following tabulation of hypothetical monthly averages, stated as proportions of the annual average, for the Su-lo Ho:

January	0.15	July	2.5
February	0.15	August	2.5
March	0.2	September	2.0
April	0.5	October	1.5
May	0.8	November	0.5
June	1.0	December	0.2

Between one-half and two-thirds of the Su-lo Ho runoff from its mountain sources comes between June and September, peaking in July and August. It is unlikely that the average rate of flow for the months of December, January, February, and March will exceed 10 m<sup>3</sup>/sec.

The Ch'ih-chin Ho is a small river fed by runoff and by piedmont springs and is located about 12 kilometers east of the Su-lo Ho. It has a mean annual flow rate of about 1.27 m<sup>3</sup>/sec, roughly 2-1/2 percent that of the Su-lo Ho. Ground water levels near the Ch'ih-chin Ho are probably high enough to permit economical pumping of ground water up to a rate of about 1 m<sup>3</sup>/sec (15,000 gal/min) for emergency use.

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Large-scale withdrawals of water from the Su-lo Ho system are likely to disrupt the agricultural economy of the oases along the Su-lo Ho, requiring that the Chinese Communist authorities either put those oases on short water rations or find substitute sources of water. Returns of used water to the piedmont gravels in the setting here envisaged will not appreciably benefit the Su-lo Ho system, but will be a contribution to the water-poor area west of Ying-p'ei-pao on the lower Ch'ih-chin Ho at the edge of the Hsi-hsi-tsu basin. Any sudden reappearance of the lake in that basin would indicate that this is happening.

The upper slope of the Su-lo Ho's alluvial fan is not a suitable location for prolonged water storage, because a reservoir here would be fairly shallow and the underlying gravels are doubtless highly permeable. There are two locations farther upstream along the Su-lo Ho where the building of dams for water storage has been envisaged by the Chinese. The use of large quantities of water for industrial purposes probably requires that such reservoirs be built ultimately, if they do not now exist.

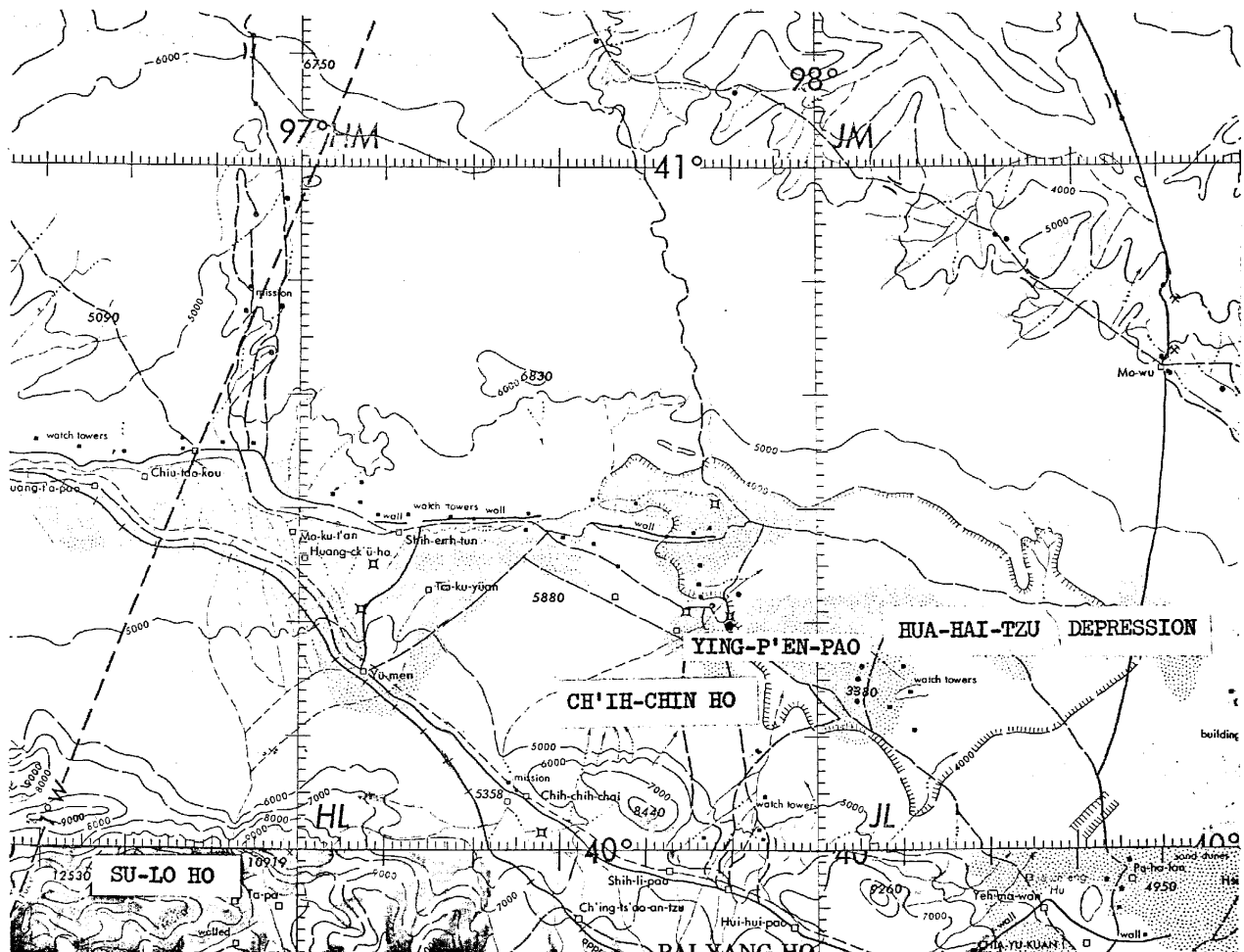
The quality of the water from the Su-lo Ho is likely to be good. The river is fed by a well-balanced combination of rainfall and meltwater. Its bed is generally rocky, and its silt load low. The degree of mineralization of stream water as the river leaves the mountains is probably slight. Downstream from the head of the alluvial fan, however, mineralization of ground water increases rapidly, and additions of mineralized ground water help increase the mineralization of Su-lo Ho water below Hsuan. The water of the Su-lo Ho near the head of the fan, however, is probably as good as if not better than the water of any other stream of comparable size in the region of the Kansu corridor.

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